Operating Instructions

wireless

Field Strength Testing Tool

> EPM 300

STAHL

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2 General Information

2.1 Manufacturer

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2.2 Operating Instructions Information

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3 Intended Use

The EPM 300 is a mobile field strength testing tool. It helps to find the right position to mount products supporting EnOcean protocol. The transmission is carried out at a frequency of 868.3 MHz. The receiver must support the protocol of the PTM and STM modules.

☞	The devices can be operated without registration and license free on the territory of the EU, Switzerland and Cyprus. The use in other countries must be explicitly clarified!

4 General Safety Instructions

The devices must be used only for the permitted purpose. Incorrect or impermissible use or non-compliance with these instructions invalidates our warranty provision. Any alterations or modifications to the device are not permitted. Use the device only if it is undamaged and clean.

⚠ WARNING
Installation, maintenance, overhaul and repair may only be carried out by appropriately authorised and trained personnel.

Observe the following information during installation and operation:

- National and local safety regulations
- National and local accident prevention regulations
- National and local assembly and installation regulations
- Generally recognized technical regulations
- Safety instructions in these operating instructions
- Characteristic values and rated operating conditions on the rating and data plates
- Additional instruction plates fixed directly to the device

⚠ WARNING
The device must not be used in connection with devices that may directly or indirectly serve health- or life-saving purposes or whose operation causes hazards to human beings, animals or asset values.

5 Conformity to Standards

The relevant standards are listed in the EC Declaration of Conformity. This document is available under www.stahl-ex.com.

6 Transport and Storage

- Transport and storage are only permitted in the original packing.

7 Technical Data

Standards	according to R&TTE: EN 300 220 (868 MHz)
Protocol	EnOcean
Frequency	868.3 MHz
Power supply	AA/LR06 battery (recommended L91)
Ambient conditions	
Ambient temperature	0 ... + 45 °C
Storage/transport temperature	- 15 ... + 65 °C
Degree of protection	IP54 acc. to IEC/EN 60529
Dimensions	110 x 70 x 25 mm
Weight	85 g (without battery)

8 Operating modes

Hold Short

This mode will indicate each received telegram of the corresponding frequency band. The signal strength of each valid signal is indicated for 1 s.

This mode is used to track radio activities with a short period such as push and release telegrams of radio switches with PTM module.

Hold Long

This mode is used by a single person to test the radio telegram range. This person places the EPM 300 on the specified mounting position of the receiver/actuator and activates the transmitter to send a telegram. The signal strength of the received telegram is indicated for 60 s.

☞	When using the »Hold Long« mode, make sure that only the EnOcean transmitter to be measured is active.

Repeater

This mode is used to determine the best mounting position of a 1-channel repeater. The EPM 300 receives valid and original (not yet repeated) telegrams, amplyfies them and passes them on. The repeated telegram is marked as "repeated". A second field strength testing tool can be used to measure the signal strength of the repeated signal on the specified mounting position of the receiver/actuator.

Radio Link Test (RLT)

If the EPM 300 is in the RLT mode, EnOcean telegrams are sent every 2 s. The SIGNAL LED »Valid« will flash for every RTL telegram sent. A second field strength testing tool can be used to measure the signal strength at the specified mounting position of the receiver/actuator.

Advanced Radio Link Test

When using an advanced field strength testing tool (for example PROBARE P30), the EPM 300 can be used in the slave mode.

As soon as the EPM 300 mode is switched into the RLT mode, it will automatically be connected to an advanced field strength testing tool (AFT). In doing so the AFT acts as RLT master and the EPM 300 as RLT slave.

9 Display of the signal strength by means of the SIGNAL LEDs

LED on: ●

LED off: ○

High	Low	No Installation	Valid	Explanation
●	○	○	●	Indicates a very well received telegram with a high signal strength (RSSI). All kind of EnOcean receivers/ transmitters can be installed.
○	●	○	●	Indicates a received telegram with medium signal strength (RSSI). It is recommended to install an external antenna or repeater.
○	○	●	○	Indicates that no telegram has been received or the signal strength (RSSI) of the received telegram is too low.
●	○	○	○	Indicates that telegrams with a high signal strength has been received from devices which are not compatible with EnOcean. The signals may disturb the receipt of EnOcean telegrams.
○	●	○	○	Indicates that telegrams with a medium signal strength has been received from devices which are not compatible with EnOcean. The signals may disturb the receipt of EnOcean telegrams.

Display of the field intensity

The signal strength (RSSI value) will be shown by a reverse LED traffic light.

Signal LED (color)	Signal strength / RSSI value
High (green)	> - 75 dBm
Low (yellow)	≤- 75 dBm, > - 90 dBm
No installation (red)	≤- 90 dBm

10 Normal Operation

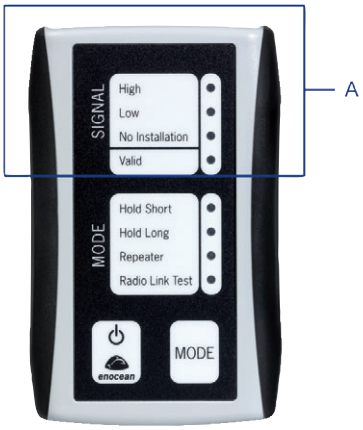
10.1 Batteries

☞	The use of rechargeable batteries with a voltage of 1.2 V (e.g. NiCd / NiMH) is not recommended. If the EPM is not used for a longer period, the batteries should be removed. This will increase the service life of both batteries and the device.

☞	Flashing MODE LEDs indicate a too low battery voltage.

▶ Open the battery compartment on the back of the device and insert two batteries AA/LR06.

10.2 Observe during operation



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The EPM 300 has an internal antenna which is located in the upper third of the device (see drawing, area A). This area should not be covered with metal or other shielding materials. It is recommended to hold the device below this antenna area.

The signal strength of radio signals decreases with increasing distance between transmitter and receiver. The transmission range also depends on the materials used in the building.

The radio range is reduced by:

✗ increasing distance between transmitter and receiver
✗ shielding by metal or massive walls
✗ installing the transmitter or receiver on the floor or close to the floor
✗ high humidity in materials
✗ devices transmitting radio signals such as computers, audio and video equipment or electronic ballasts for lamps. To these devices, a minimum distance of 0.5 m should be kept.

10.3 Measuring the field intensity

☞	When using the operating mode »Hold Long«, make sure that only the EnOcean transmitter to be measured is active.

- ▶ Activate the EPM 300 by pressing the »On/Off button«.
- ▶ Place the EPM 300 on the specified mounting position of the receiver/actuator to be installed.
- ▶ Select the operating mode »Hold Short« or »Hold Long« by pressing the »MODE« button.
- ▶ Send an EnOcean telegram by pressing a radio switch or the learn button of a radio sensor.
- ▶ Read the signal strength of the received telegrams on the SIGNAL LEDs.

10.4 Using the EPM 300 as repeater

- ▶ Activate the EPM 300 by pressing the »On/Off button«.
- ▶ Select the operating mode »Repeater« by pressing the »MODE« button.
- ▶ Place the EPM 300 on the specified mounting position of the repeater to be installed.
- ▷ The EPM 300 receives original EnOcean telegrams, marks them as "repeated" and passes them on.
- ▶ Measure the signal strength of the repeated telegram by means of a second field strength testing tool.

10.5 Using the EPM 300 as transmitter

- ▶ Activate the EPM 300 by pressing the »On/Off button«.
- ▶ Select the operating mode »Radio Link Test« by pressing the »MODE« button.
- ▷ The EPM 300 sends an EnOcean telegram every 2 s.
- ▶ Place the EPM 300 on the specified mounting position of the transmitter to be installed.
- ▶ Measure the signal strength of the sent telegrams by means of a second field strength testing tool.

11 Maintenance, Overhaul and Repair

We recommend regular maintenance in the following steps:

- ▶ Check functions
- ▶ Clean
- ▶ Replace batteries

12 Disposal

The national waste disposal regulations have to be observed.

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